

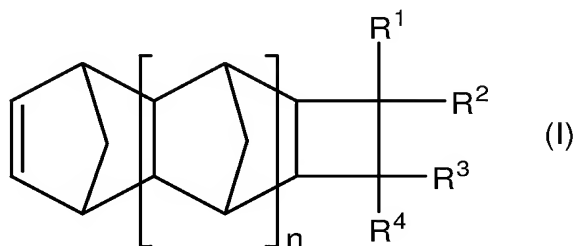
## REMARKS

Claims 1-14 are pending. No amendments have been made to the pending claims.

### Rejection of claims 1-4 under 35 U.S.C. § 103

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. 3,810,949 (“the 949 patent”), Sauers et al., J. Org. Chem. 6, **1968**, 2175-2181 (“Sauers”), or U.S. 4,002,691 (“the 691 patent”), each individually in view of U.S. 5,229,473 (“the 473 patent”) and/or U.S. 2,928,865 (“the 865 patent”). The Applicants respectfully disagree and request withdrawal of the rejection.

Claim 1 is directed to, among other things, a fluorine-containing copolymer comprising (a) at least one repeat unit derived from an ethylenically unsaturated compound having at least one fluorine atom covalently attached to an ethylenically unsaturated carbon atom and (b) at least one repeat unit derived from an ethylenically unsaturated cyclic compound of structure (I):

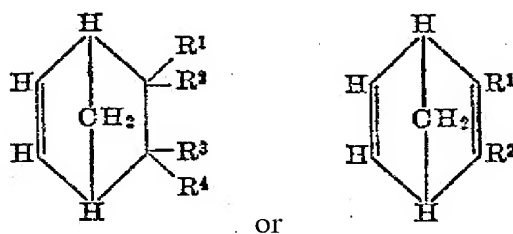


The Office identifies the 949 patent, Sauers, and the 691 patent as describing compounds of structure I. Although the Applicants do not necessarily disagree that such structures are present in those reference, the Applicants disagree with the Office's characterization that any of those references teach or suggest that those compounds of structure I can be polymerized with a monomer such as ethylene.

As an initial matter, the 949 patent, Sauers, and the 691 patent do not teach or suggest that compounds of structure (I) are useful monomers for the polymerization with ethylene as suggested by the Office Action. In particular, the Office Action (page 4, ¶5) references the following disclosure of the 949 patent: “[s]ome of the products of this invention (e.g., those possessing *an allylic substituent*) may be utilized as monomers. For example, they may be

copolymerized with ethylene in accordance with known Ziegler/Natta type technology in order to form a variety of polymers of differing physical properties” (949 patent, col. 18, line 73-col. 19, line 2, emphasis added). It is known in the art that an allylic group refers to a specific type of *terminal* double bond, *i.e.*,  $\text{CH}_2=\text{CH}-\text{CH}_2-$ . Indeed, the Ziegler/Natta technology is typically only used on terminal double bonds. In contrast, the claimed compounds of structure (I) do not possess an allylic substituent, but instead possess an *internal* double bond that polymerizes with the ethylenically unsaturated compound having at least one fluorine atom. Accordingly, Applicants respectfully submit that the 949 patent, Sauers, and Shepherd do not teach or suggest that compounds of structure (I) are useful monomers for the polymerization with ethylene.

In addition, while the 865 patent describes a compound of structure (I), but wherein  $\text{R}^1$  and  $\text{R}^2$  are fluorine (a substitution *not* permitted by the claimed invention), nowhere in the 865 patent is it taught or suggested that such a compound can be polymerized with a fluoroolefin. The 865 patent specification states that it is “an object of the invention to prepare novel polycyclic fluorine-containing compounds” (col. 1, lines 27-28). There is no mention of the preparation of any polymers. Furthermore, the only mention of a fluoroolefin in the 865 patent is the teaching of the reaction of a fluoroolefin with either



The *further polymerization* with a fluoroolefin is not described. See the 865 patent, Example 1.

Not only do the above references fail to describe or suggest the limitations of the claimed invention, the 473 patent teaches away from the copolymers of the claimed invention. The Office states that the 473 reference allegedly discloses a method for the production of the claimed fluorinated copolymer by “using almost the same monomer (b) (see formula (ii) on abstract) *except the ring size is five or six but not four*” (Action at 4, ¶6, emphasis added). But as the specification of the 473 patent suggests, one of skill in the art would not have expected such a substitution, *i.e.*, modifying a fused five- or six-membered

ring system to a fused four-membered ring system, to produce the copolymers of the claimed invention.

For example, the inventors of the subject matter of the 473 patent “conducted *extensive research* in view of the [problems in the prior art] and found that *specific* unsaturated compounds are copolymerized in the presence of radical polymerization initiators to prepare copolymers which have high glass transition point (Tg) and are excellent in solubility to organic solvent, transparency, heat resistance, low water absorption properties, mechanical properties, weather resistance, etc.” (473 patent at col. 1, lines 53-61, emphasis added). Yet nowhere in the specification of the 473 patent are compounds of structure (I) identified by the Office in the 949 and 691 patents and Sauers described as capable of the radical polymerization described therein.

The 473 identifies that only *specific* unsaturated compounds, *i.e.*, those compounds expressly described in the 473 specification, are capable of the described polymerization. Any compounds of the present claims are conspicuously absent. Based on the evidence of record, one of skill in the art, aware of the 949 and 691 patents, as well as Sauers, would have therefore concluded that compounds of structure (I), such as those presently claimed, would have been *unsuitable* for the polymerization described in the 473 patent. There is no evidence that one of skill in the art would have been motivated to modify the disclosure of the 473 patent to produce the claimed invention. Accordingly, Applicants submit that a *prima facie* case of obviousness has not been established and respectfully request withdrawal of the rejection.

### **Rejection of claims 5-14 under 35 U.S.C. § 103**

Claims 5-14 stand rejected under 35 U.S.C. § 103 as allegedly obvious over the 949 patent, Sauers, or the 691 patent, each individually in view of the 473 patent and/or the 865 patent and further in view of US 2003/0215735. In light of the above comments, the Applicants consider the rejection of claims 5-14 as allegedly obvious to be moot and respectfully request its withdrawal.

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**DOCKET NO.:** DPSR-0002/SR0020USPCT  
**Application No.:** 10/523,492  
**Office Action Dated:** October 18, 2007

**PATENT**

The Applicants assert that the foregoing constitutes a *bona fide* response to the pending Office Action and that the claims are in condition for allowance. Accordingly, an early Notice of Allowance is earnestly solicited.

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